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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,310	06/27/2001	Richard L. Coulson	42390P11448	7622

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EXAMINER

INOA, MIDYS

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,310	COULSON ET AL.	
	Examiner	Art Unit	
	Midys Inoa	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6, 10-29 and 33-41 is/are allowed.
- 6) ☒ Claim(s) 7-9 and 30-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 31 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 31 is dependent from claim 30 and recites the limitations of “computer instructions to pin data accessed during a system initialization”. These limitations are already included in the scope of claim 30.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 7-9 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green (6,044,478) in view of Bierma et al. (5,758,149).

Regarding Claims 30-31, Green discloses a method comprising storing data needed by a system's time critical instruction in a cache memory of the system (see Figure 5, 204, Column 2, lines 3-21); and **pinning (locking)** at least a portions of the data stored in the cache memory (Column 2, line 46 to Column 3, line 17), wherein the pinning is performed during the initial execution of the time critical instruction. Green does not teach the cache memory being a non-

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volatile memory. Additionally, Green does not specifically identify the data being stored and pinned as initialization data. However, it is noted that initialization is in fact a type of time critical instruction. Bierma et al. teaches issuing a "Lock File" command to a Non-volatile cache 102 (see Figure 35 and Column 26, lines 54-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a non-volatile cache in the system of Green since this modification would allow the system to pin data needed by the system at all times and ensure that this data, pinned prior to a system shutdown, will still be readily available (since it is in a cache) once the system starts up again. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to lock initialization data in the non-volatile cache since this data is always needed by the system and locking it in the cache would make it more readily accessible each time the system has to initialize, thus speeding up the initialization process (see Definitions for *ini file* and *boot data* for further support).

Regarding Claim 7, Green discloses a system comprising a state to indicate least recently used information of a corresponding line of data in a cache memory of the system (Figure 7, cache usage logic 213); and a second state to indicate whether a corresponding line of data in the cache memory is pinned (Figure 7, lock status indicator 215 and Figure 5, 224; Column 15, lines 42-55). Green does not teach the cache memory being a non-volatile memory. Additionally, Green does not specifically identify the data being stored and pinned as initialization data. However, it is noted that initialization is in fact a type of time critical instruction. Bierma et al. teaches issuing a "Lock File" command to a Non-volatile cache 102 (see Figure 35 and Column 26, lines 54-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a non-volatile cache in the system of Green since this modification

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would allow the system to pin data needed by the system at all times and ensure that this data, pinned prior to a system shutdown, will still be readily available (since it is in a cache) once the system starts up again. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to lock initialization data in the non-volatile cache since this data is always needed by the system and locking it in the cache would make it more readily accessible each time the system has to initialize, thus speeding up the initialization process (see Definitions for *ini file* and *boot data* for further support).

Regarding Claim 8, Green discloses data states being stored in the cache tag where one of such states could indicate the data's age and thus indicate if the data was present before system initialization.

Regarding Claim 9, Green discloses storing and pinning data needed by a system's time critical instruction in a cache memory (see Figure 5, 204, Column 2, lines 3-21); where the system's time critical instruction could be system initialization and the data needed is initialization data. Additionally, Green discloses storing the MESI and valid states in a secondary cache tag (second memory), which could be volatile.

Regarding Claim 32, if the data being pinned is that which is needed for system initialization, in pinning this data only, the pinning of data is being limited.

Response to Arguments

4. Applicant's arguments, with respect to claims 1-6, 10-29, and 33-41 have been fully considered and are persuasive. The rejection of these claims has been withdrawn. Applicant argues that the Prior Art does not teach pinning initialization data **wherein the pinning is performed during initialization of the system.**

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5. Applicant's arguments with respect to claims 7-9 and 30-32 have been considered but are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, Green discloses a method comprising storing data needed by a system's time critical instruction in a cache memory of the system (see Figure 5, 204, Column 2, lines 3-21); and **pinning (locking)** at least a portions of the data stored in the cache memory (Column 2, line 46 to Column 3, line 17), wherein the pinning is performed during the initial execution of the time critical instruction. Green does not teach the cache memory being a non-volatile memory. Additionally, Green does not specifically identify the data being stored and pinned as initialization data. However, it is noted that initialization is in fact a type of time critical

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instruction. Bierma et al. teaches issuing a "Lock File" command to a Non-volatile cache 102 (see Figure 35 and Column 26, lines 54-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a non-volatile cache in the system of Green since this modification would allow the system to pin data needed by the system at all times and ensure that this data, pinned prior to a system shutdown, will still be readily available (since it is in a cache) once the system starts up again. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to lock initialization data in the non-volatile cache since this data is always needed by the system and locking it in the cache would make it more readily accessible each time the system has to initialize, thus speeding up the initialization process (see Definitions for *ini file* and *boot data* for further support)..

Applicant argues that the examiner's conclusion does not come from the Prior Art. However, Green does teach pinning time critical data where such time critical data could be initialization data. Green lacks the non-volatile cache; this limitation is therefore, taught by Bierma.

Allowable Subject Matter

6. Claims 1-6, 10-29, and 33-41 are allowed
7. The following is a statement of reasons for the indication of allowable subject matter:

The Prior Art does not teach the limitations of Independent Claims 1, 10, 15, 23, and 33.

Regarding Claims 1, 15, The Prior Art of Record does not teach nor suggest in the claimed combination pinning data in a cache memory **wherein the pinning is performed during initialization of the system.**

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Regarding Claims 10, 23, The Prior Art of Record does not teach nor suggest in the claimed combination metadata including a state to indicate whether a corresponding line of data in a non-volatile memory is pinned **wherein the state is set during initialization of the system.**

Regarding Claim 33, The Prior Art of Record does not teach nor suggest in the claimed combination marking data stored in a non-volatile cache memory to prevent eviction of the data, **wherein the marking occurs during initialization of the system.**

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Inoa whose telephone number is (571) 272-4207. The examiner can normally be reached on M-F 7:00am - 4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Midys Inoa

Midys Inoa

Examiner

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MI

Mano Padmanabhan
2/1/05

**MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER**